

Testicular seminoma and fibrosis of the contralateral testis: a diagnosis based on MR imaging findings

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Patient: 47 years, male

Clinical History:

A 47-year-old man was referred for painless enlargement of the left hemiscrotum. A history of recent trauma of the left testis was reported. Clinical examination revealed a small, soft right testis and a large, firm mass involving the left scrotum and extending to the ipsilateral spermatic cord.

Imaging Findings:

We report an unusual case of testicular seminoma and synchronous fibrosis of the contralateral testis evaluated by MR imaging. The MR features of both testicular seminoma and fibrosis are presented and the role of MR imaging in the preoperative diagnosis is discussed.

Laboratory analysis showed high levels of LDH, β -HCG and α -FP.

Sonography of the scrotum revealed a large left testicular tumour and a small, hypoechoic lesion of the upper pole of the right testis. MRI of the scrotum was followed. A large, inhomogeneous mass replacing the left testis and extending to the ipsilateral paratesticular space and the spermatic cord (Fig. 1, 2, 3) was detected. The lesion was mainly of low signal intensity on T2-weighted images (Fig. 2), with strong and heterogeneous enhancement; areas that did not enhance (Fig. 3a) corresponded to areas of necrosis on pathology. The presence of septa within the tumour (Fig. 2) was suggestive of seminomatous nature. An ill-defined mass in the upper pole of the right testis was found to coexist. The lesion had very low intensity signal on T2-weighted images (Fig. 2c, d), a finding that was suggestive for the presence of fibrous tissue and did not enhance (Fig. 3a), confirming the diagnosis of benignity. CT examination of the chest and abdomen showed the presence of bulky retroperitoneal lymphadenopathy, causing left hydronephrosis.

Left radical orchiectomy and biopsies of the right testis confirmed the presence of left testicular seminoma and densely collagenised fibrous tissue of the right testis (Fig. 4).

Discussion:

Testicular carcinoma represents only 1% of all malignant neoplasms in men [1]. Approximately 95% of testicular malignancies are germ cell tumours, of which seminoma is the most common histologic subtype [1]. Compared to the nonseminomatous germ cell tumours, seminoma occurs in an older patient population, with a mean age at presentation of approximately 40 years, as seen also in this case. These tumours are extremely sensitive to radiation and chemotherapy, resulting in a 5-year survival rate of 95%, for low stage tumours [1, 2]. Seminomas range in size from a small, well-defined lesion to large masses, which totally replace the testicle, as in our patient, in whom the tumour also invaded the paratesticular space and the spermatic cord.

On pathology, seminomas are usually homogeneously solid lesions that may have sharply demarcated areas of necrosis. Microscopically, these tumours are composed of uniform cells, characteristically arranged in nests, outlined by fibrous bands in 80% of cases. The imaging features reflect their gross morphology and histologic characteristics [2-4]. On sonography, testicular seminomas are generally uniformly hypoechoic [2]. On MR imaging, these tumours are usually of uniform, low signal intensity on T2-weighted images [3, 4]. The presence of fibrovascular septa, detected as hypointense bands on T2-weighted images, enhancing more than the remaining tumoral tissue after gadolinium administration, is considered as suggestive of the seminomatous nature of these neoplasms [3, 4]. The aforementioned MR findings were met in this patient.

Although, the majority of intratesticular masses are malignant, nonneoplastic testicular lesions, as orchitis, haemorrhage, ischaemia or infarction and fibrosis need to be accurately differentiated preoperatively [1, 5-7]. Radical orchiectomy is the treatment of choice in patients with testicular malignancies. Nevertheless, correct characterisation of the rare benign intratesticular mass lesions, based on imaging findings may obviate unnecessary orchiectomy, as it was seen in this case with the synchronous coexistence of an aggressive left testicular seminoma, treated with radical orchiectomy and testicular fibrosis of the contralateral testis, confirmed histologically after biopsy.

MR imaging represents an alternative imaging modality of satisfactory performance in the morphological evaluation and tissue characterisation of scrotal diseases [1, 5-17]. The advantages of the technique are imaging in various planes, adequate anatomic information and satisfactory tissue contrast. The technique may provide accurate diagnostic information about the histologic nature of various benign intratesticular lesions, as haemorrhagic necrosis, testicular fibrosis, cystic ectasia of the rete testis, testicular infarction or haematoma and intratesticular epidermoid cyst [1, 5-7, 14-17]. A possible benign diagnosis based on MR features may reduce unnecessary surgical explorations, as seen in our patient.

The MR diagnosis of testicular fibrosis is usually straightforward. The presence of fibrous tissue is detected with low and very low signal intensity on T1 and T2-weighted images, respectively, sometimes radiating from the mediastinum testis [5, 6]. The absence of contrast enhancement is considered a sensitive sign used to confirm the diagnosis of benignity in these cases [5, 6].

Differential Diagnosis List: Testicular seminoma and fibrosis of the contralateral testis.

Final Diagnosis: Testicular seminoma and fibrosis of the contralateral testis.

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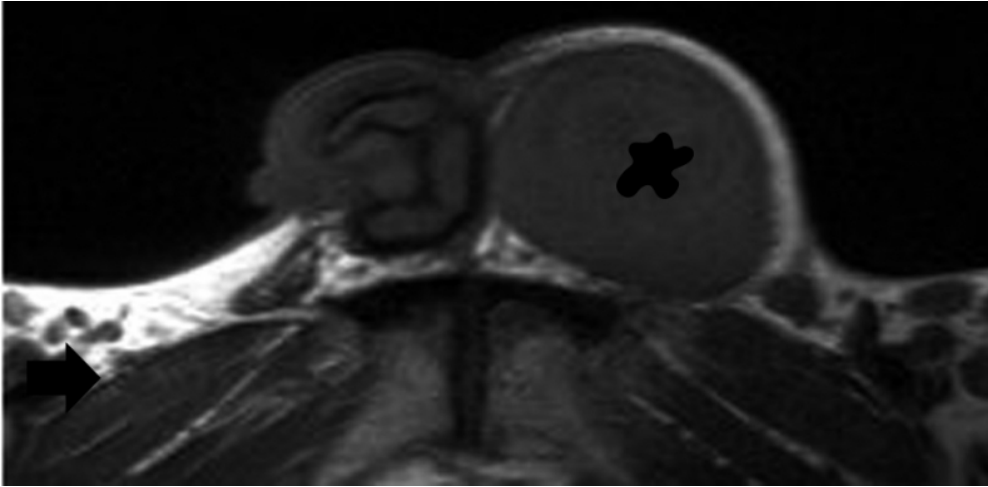
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Figure 1

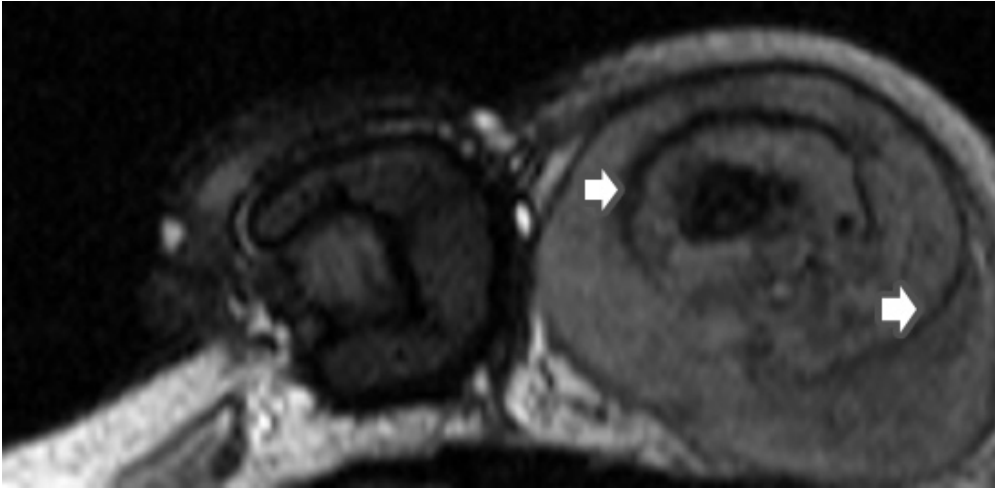
a



Description: Transverse T1-weighted image shows a large mass (asterisk) replacing the left testis. The lesion is isointense when compared to the normal contralateral testis (not shown) and to the muscle. **Origin:**

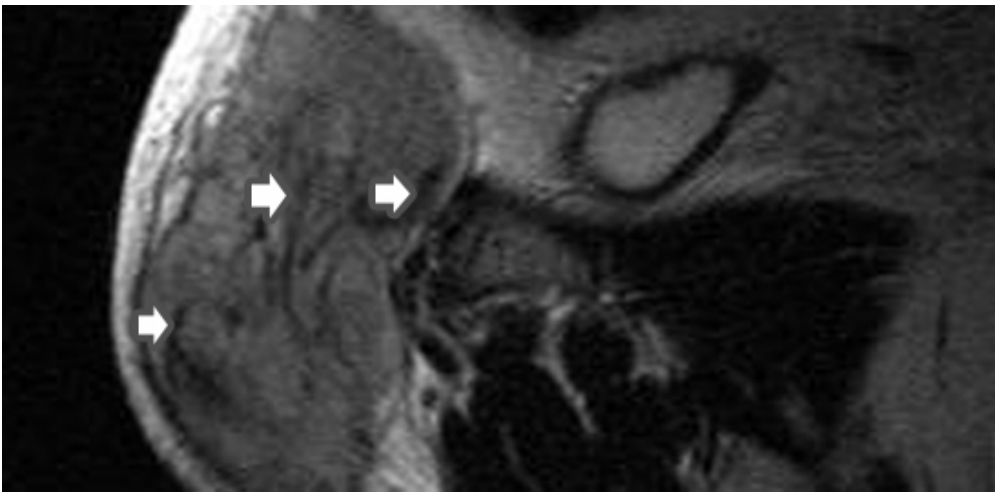
Figure 2

a



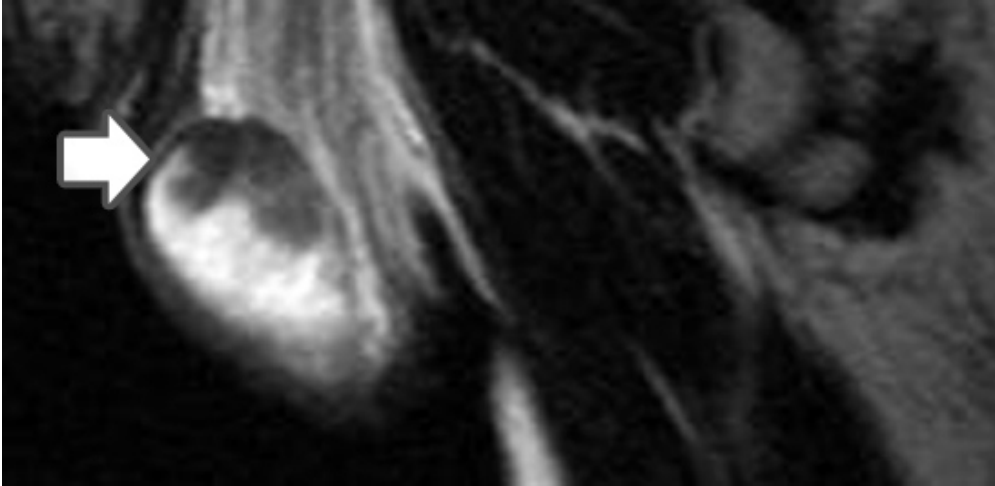
Description: Transverse (a) sagittal (b, c) and coronal (d) T2-weighted images depict tumour extension to the paratesticular space and the left spermatic cord. The lesion is heterogeneous, but mainly hypointense, compared to the right normal testis. Bands of low signal intensity (small arrows) corresponding to fibrovascular septa on pathology are detected within the mass, considered as more suggestive for the diagnosis of a seminoma. The upper pole lesion of the right testis (arrow) has very low signal intensity on T2-weighted images, a finding corresponding to fibrosis on histology. **Origin:**

b



Description: Transverse (a) sagittal (b, c) and coronal (d) T2-weighted images depict tumour extension to the paratesticular space and the left spermatic cord. The lesion is heterogeneous, but mainly hypointense, compared to the right normal testis. Bands of low signal intensity (small arrows) corresponding to fibrovascular septa on pathology are detected within the mass, considered as more suggestive for the diagnosis of a seminoma. The upper pole lesion of the right testis (arrow) has very low signal intensity on T2-weighted images, a finding corresponding to fibrosis on histology. **Origin:**

c



Description: Transverse (a) sagittal (b, c) and coronal (d) T2-weighted images depict tumour extension to the paratesticular space and the left spermatic cord. The lesion is heterogeneous, but mainly hypointense, compared to the right normal testis. Bands of low signal intensity (small arrows) corresponding to fibrovascular septa on pathology are detected within the mass, considered as more suggestive for the diagnosis of a seminoma. The upper pole lesion of the right testis (arrow) has very low signal intensity on T2-weighted images, a finding corresponding to fibrosis on histology. **Origin:**

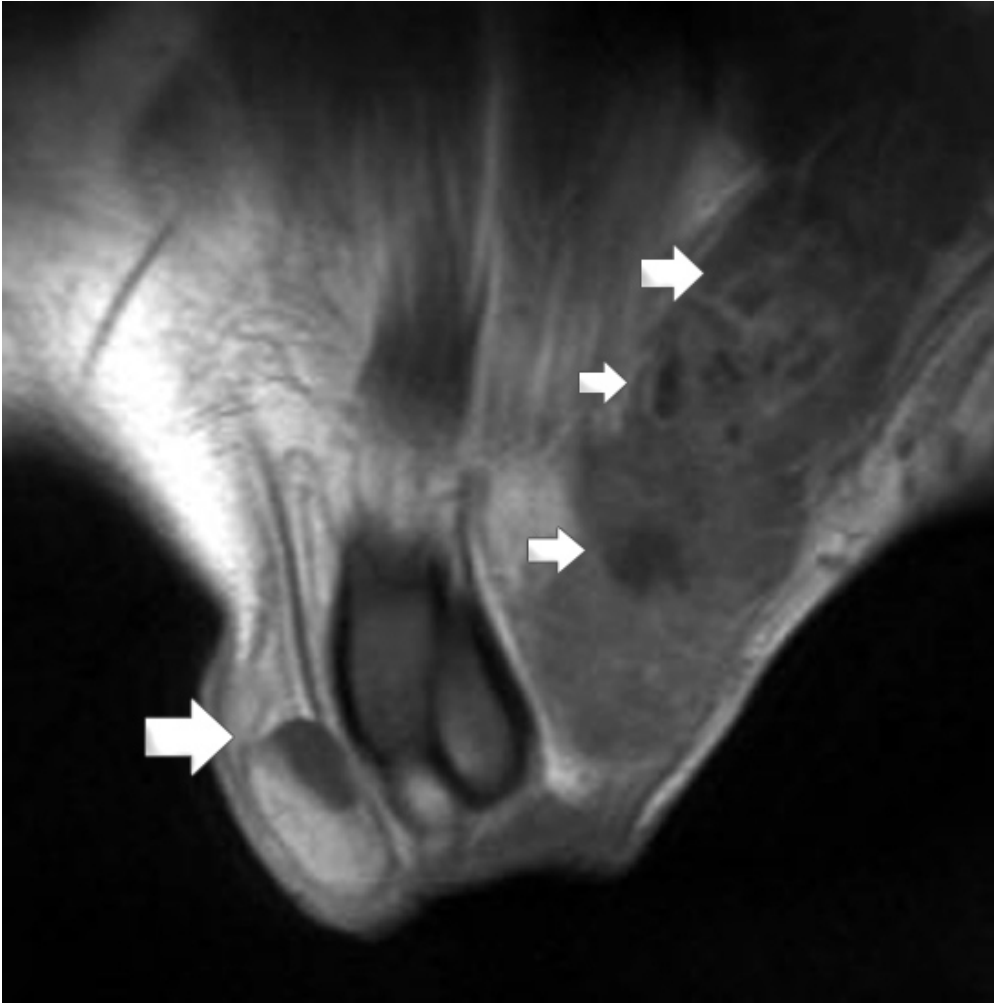
d



Description: Transverse (a) sagittal (b, c) and coronal (d) T2-weighted images depict tumour extension to the paratesticular space and the left spermatic cord. The lesion is heterogeneous, but mainly hypointense, compared to the right normal testis. Bands of low signal intensity (small arrows) corresponding to fibrovascular septa on pathology are detected within the mass, considered as more suggestive for the diagnosis of a seminoma. The upper pole lesion of the right testis (arrow) has very low signal intensity on T2-weighted images, a finding corresponding to fibrosis on histology. **Origin:**

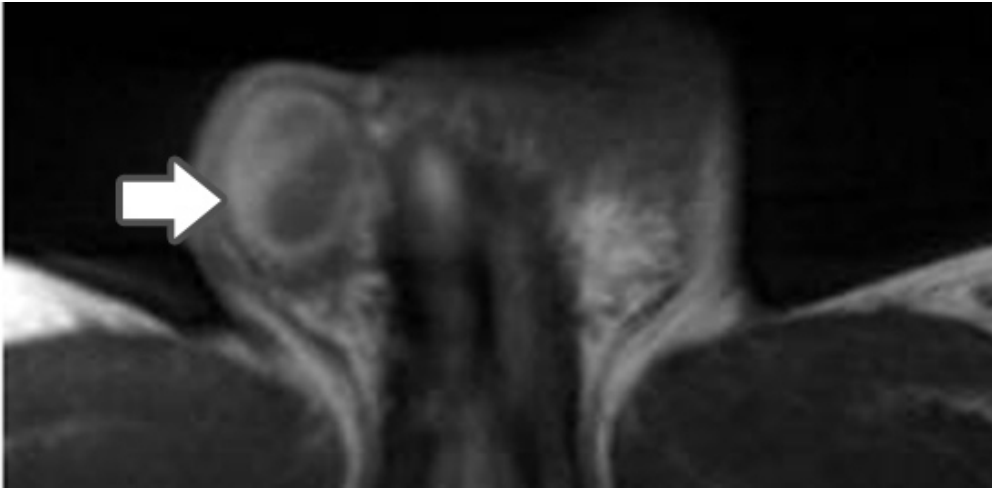
Figure 3

a



Description: Coronal (a) and transverse (b) post contrast T1-weighted images depict strong and heterogeneous enhancement of the left scrotal mass. Areas of necrosis were detected as non-enhancing areas (small arrows) within the tumour. The right testicle lesion does not enhance (arrow), a finding highly suggestive of benignity. **Origin:**

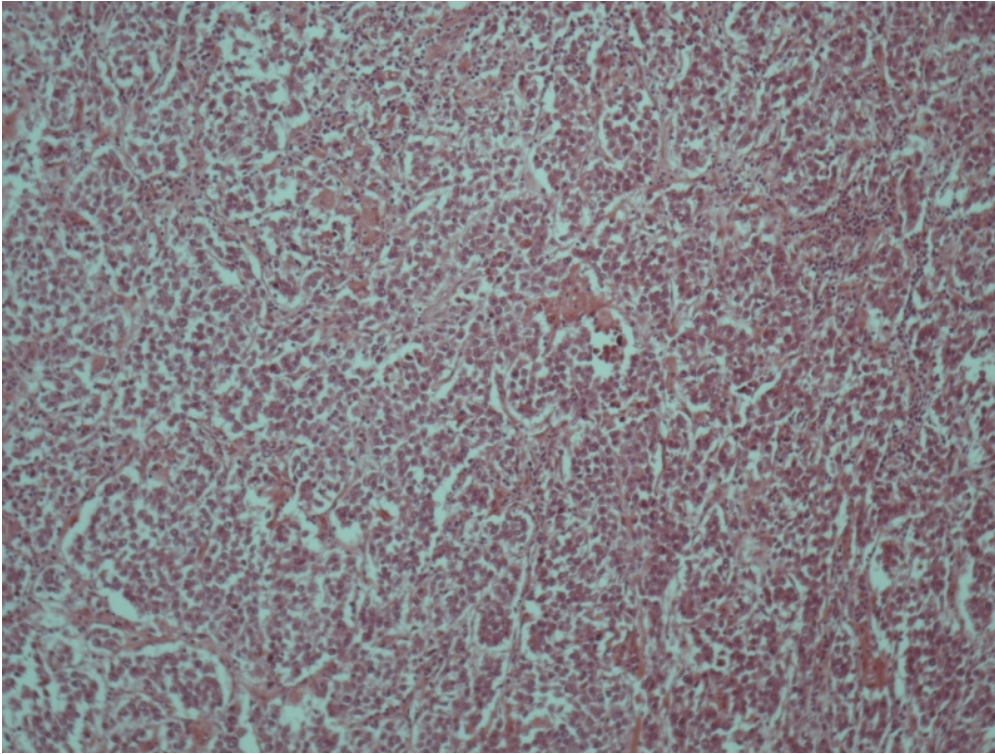
b



Description: Coronal (a) and transverse (b) post contrast T1-weighted images depict strong and heterogeneous enhancement of the left scrotal mass. Areas of necrosis were detected as non-enhancing areas (small arrows) within the tumour. The right testicle lesion does not enhance (arrow), a finding highly suggestive of benignity. **Origin:**

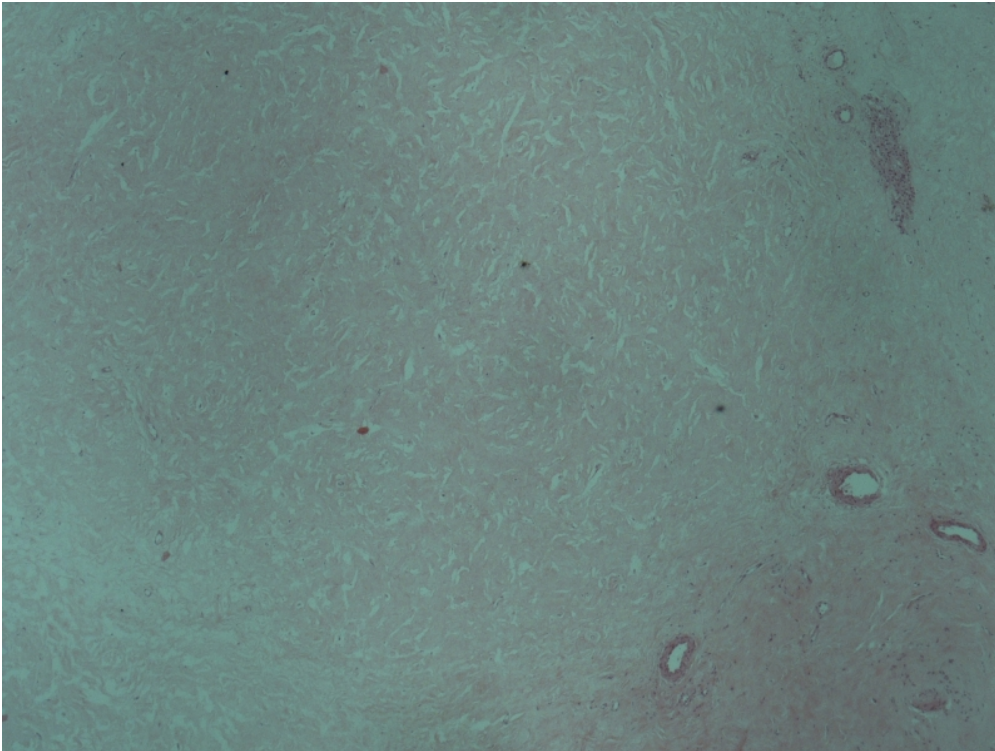
Figure 4

a



Description: Classical seminoma showing lobular pattern, uniform cells and fibrovascular septa (H-E X 100). **Origin:**

b



Description: Densely collagenised fibrous tissue. Focal presence of clusters of Leydig cells (H-E X 40).
Origin: